Faunitaxys

Revue de Faunistique, Taxonomie et Systématique morphologique et moléculaire

Volume 13
Numéro 07

Février 2025

ISSN (Print) : 2269 - 6016
ISSN (Online) : 2970 - 4960
Dépôt légal : Février 2025

Faunitaxys

Revue de Faunistique, Taxonomie et Systématique morphologique et moléculaire

ZooBank : https://zoobank.org/79A36B2E-F645-4F9A-AE2B-ED32CE6771CC

Directeur de la publication, rédacteur, conception graphique et PAO:
Lionel Delaunay

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Faunitaxys est indexé dans / ***Faunitaxys*** is indexed in:
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Imprimé le 12 02 2025

https://doi.org/10.57800/faunitaxys-13(07)

The genus *Epicasta* Thomson, 1864 and the limits of the morphological systematics in the study of Lamiinae (Coleoptera Cerambycidae)

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Keywords:

Coleoptera;
Cerambycidae;
Lamiini;
Epicastini;
Desmiphorini;
Epicasta;
taxonomy;
description;
synonymy;
new species;
Malaysia.

Abstract. – *Epicasta malayana* **n**. **sp**. from peninsular Malaysia is described. The peculiar coloration of this species has allowed allocating it into the genus *Epicasta* Thomson, 1864 (Desmiphorini, *olim* Epicastini), but the presence of a cicatrix on the scape places it into the tribe Lamiini. The analysis of the other species of the genus has allowed transferring *Epicasta* to Lamiini and to consider Epicastini a junior synonym of Lamiini. The systematic position of *Acalolepta biocellata* Breuning 1940 and of the genus *Pseudodihammus* Breuning, 1936, which show characters similar to *Epicasta*, are discussed.

Vitali F., 2025. – The genus *Epicasta* Thomson, 1864 and the limits of the morphological systematics in the study of Lamiinae (Coleoptera Cerambycidae). *Faunitaxys*, 13(07): 1 – 5.

DOI: https://doi.org/10.57800/faunitaxys-13(07)

ZooBank: https://zoobank.org/BF342B1F-5070-4397-BA5F-DB8A5718C70C

Received: 12/12/2024 – *Revised*: 07/01/2025 – *Accepted*: 08/01/2025

Introduction

Thomson (1864) introduced the genus *Epicasta* for a new species from Java, *Epicasta ocellata*. He classified this new genus in the Zygoceritae (based on the Australian genus *Zygocera* Dejean, 1835), a heterogeneous group including several genera belonging today to different tribes of Lamiinae (Pteropliini, Theocridini, Desmiphorini, Zygocerini, Lamiini). The author noticed its close resemblance with *Monochamus* except for the scape not having a cicatrix and the spined humeri.

Two years later, Pascoe (1866) described the genus *Psaumis* for a new species from Sarawak, *Psaumis turbidus*. He classified this new genus in the Hypselominae, based on the Neotropical genus *Hypselomus* Perty, 1832 (now, Onciderini). This "subfamily", characterised by "the approximate and almost contiguous position of the antennae at their base", included several genera currently classified as Lamiini, such as *Cereopsius* Pascoe, 1857; *Combe* Thomson, 1864; *Pharsalia* Thomson, 1864; *Triammatus* Chevrolat, 1856; *Xoes* Pascoe, 1866; etc, although some of them, *e.g.*, *Cereopsius* and *Psaumis,* did not show this character.

Being that *Psaumis turbidus* is extremely similar to *Epicasta ocellata*, Lacordaire (1872) synonymised *Psaumis* with *Epicasta* and introduced the group Épicastides for this genus and three others from Australia and Madagascar. This new group was characterised by open mesocoxal cavities, opposed claws and furrowed mesotibiae (this character not present in all genera).

This taxonomy, used by Aurivillius (1921), was modified by Breuning (1950), who merged the tribe Epicastini (and several other tribes) into Desmiphorini.

Nearly at the same time, Gressitt (1951) treated several Desmiphorini (*sensu* Breuning) as belonging to their original

Fig. **1**. *Epicasta malayana* **n**. **sp**. ♀, holotype (CFV).

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tribes (Apodasyiini, Estolini, Velorini, etc.) and introduced Rhodopinini for the only genus *Rhodopina*.
Later, Breuning (1976) merged Desmiphorini into Rhodopinini, a classification accepted by Makihara *et al*. (2002).
Bousquet *et al*. (2009) separated again Rhodopinini from Desmiphorini but accepted Breuning's taxonomy concerning the position of Epicastini into Desmiphorini, while Souza *et al.* (2020) recognised Rhodopinini as part of the large tribe Lamiini.
In conclusion, since Breuning (1950), *Epicasta* belongs to the large tribe Desmiphorini, despite its "monochamoid" aspect and the unusual furrowed mesotibiae.
The discovering of a new species of *Epicasta* with a cicatrix on the scape has given a new light on this genus.

Examined collections

BMNH: British Museum of Natural History, London (United Kingdom)
CFV: Collection Francesco Vitali, Luxembourg (Luxembourg)
CSD: Collection Sergio Devesa, Pontevedra (Spain)
MNHNP: National Museum of Natural History, Paris (France)
USNM: National Museum of Natural History, Washington (USA)

Results

Lamiini Latreille, 1825
= **Epicastini** Lacordaire, 1872 **n**. **syn**.
Epicasta Thomson, 1864
Epicasta malayana **n**. **sp**.
(Fig. 1)

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Holotype, ♀, Malaysia, Pahang, Cameron Highlands, IV-2020, local collector, *in* CFV (Fig. 1).

Paratype, **1** ♀, Malaysia, Perak, local collector, *in* CSD.

Other examined material

- *Epicasta ocellata* Thomson, 1864, HOLOTYPE, ♂: ocellata / Typ. Thoms[on] / Java [handwritten on a yellow framed label] // Th. [omson] / Type [handwritten and printed on a black framed label] // Musèum [sic!] / Paris [printed on a white label] // HOLOTYPE [printed on a red label], in MNHNP (Fig. 2).
- *Psaumis turbidus* Pascoe, 1866, HOLOTYPE, ♀: Borneo, Sarawak, in BMNH (Fig. 3).
- *Dihammus biocellatus* Breuning, 1940, HOLOTYPE, ♂: Sumatra / Corinchi Lake [handwritten a white label] // Dihammus / biocellatus / mihi Typ! / dét. Breuning [handwritten by Breuning and printed on a white label] // sp. n. / biocellatus / Brg. [handwritten by Tippmann on a black framed label] // BLNO / 000344 [printed on a sky-blue label] // HOLOTYPE [printed on a red label], in USNM (Fig. 4).

Description

Body length 24 mm. Habitus elongated.

Coloration. – Integument reddish brown, covered with dense recumbent fulvous pubescence on antennae, legs, ventral side and most of the dorsal side. Pronotum dorsally covered with grey pubescence; at each side, with a pre-apical pitch-brown spot and a longitudinal pitch-brown band that does reach either the pre-apical or the pre-basal furrow. Scutellum covered with golden pubescence. Elytra crossed by a grey pre-median V-shaped band and a grey pre-apical Λ-shaped band, which are separated along the suture by an elongate pitch-brown spot; apex more or less darkened.

Head. – Frons parallel-sided, elongated, smooth; clypeus very narrow, glabrous; labrum feebly bilobed; eyes about three times as long as genae; vertex smooth. Antennae long, about 1.5 (♀) times as long as body; antennomere VIII (♀) surpasses the elytral apex; scape feebly conical, nearly cylindrical, truncated and with a feebly open cicatrix at apex; pedicel transverse; antennomere III 1.5 times as long as scape.

Pronotum. – Transverse, straight at apex, bisinuate at base, with two transverse furrows at apex and at base; each side armed with a large conical tooth, obtuse at apex; disc uneven, with three weak tubercles on the disc, two anterior and one posterior, reaching the apical and the basal furrows respectively; surface between irregularly covered with quite dense fine punctures.

Scutellum. – Rounded, apically triangular and densely pubescent.

Elytra. – Narrow (each elytron hardly 4 times as long as wide at base), tapered to the apex; apex evenly rounded; disk covered with dense pubescence and an almost regular puncturing vanishing at the apex.

Legs. – Legs and tarsi of usual length, mesotibiae toothed, claws opposite.

Prosternum. – Anteriorly truncated; last visible urosternite triangularly impressed and posteriorly truncate (♀).

Etymology. – The specific epithet *malayana* refers to its origin (Malaya, historical name of Malaysia).

Differential diagnosis. – This species is closely related to the already described species (Fig. 2-3), differing from both in the scape with cicatrix and the pronotum with two lateral dark bands. Moreover, it differs from *E. turbida* (Fig. 3) in the unarmed humeri and in the rounded apex of the scutellum (apically truncated in *E. turbida*).
On the other side, *Epicasta malayana* **n**. **sp**. looks extremely similar to *Acalolepta biocellata* (Breuning 1940). The only structural difference from this species (Fig. 4) is the prosternum anteriorly rounded rather than truncated, while the elytral coloration is a bit different, the post-scutellar spot being strongly reduced to two lateral spots.

Discussion. – The considered species show a set of characters, usually used to define genera and even tribes (Tab. 1).

- *Epicasta malayana* **n**. **sp**. differs from *Acalolepta biocellata* (Fig. 4) in the truncated prosternum, but several authors

Tab. **1**. The considered species set of characters usually used to define genera and even tribes.

	biocellata	***malayana***	***ocellata***	***turbida***
prosternum	rounded	truncated	truncated	truncated
scape	ridged	ridged	simple	simple
humerus	rounded	rounded	rounded	angulated
original genus	*Dihammus*		*Epicasta*	*Psaumis*
original tribe	Agniini		Zygocerini	Hypselominae
current genus	*Acalolepta*		*Epicasta*	*Epicasta*
current tribe	Lamiini		Desmiphorini	Desmiphorini

2a

2b

3

4a

4b

Fig. **2**. *Epicasta ocellata* Thomson, 1864. **a**. ♂, holotype. **b**. Original labels (MNHNP).
Fig. **3**. *Psaumis turbidus* Pascoe, 1866. ♀, holotype (BMNH).
Fig. **4**. *Dihammus biocellatus* Breuning, 1940. **a**. ♂, holotype. **b**. Original labels (USNM).
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(LINGAFELTER & HOEBEKE, 2002; YAMASAKO & OBAYASHI, 2009; VITALI, 2013) considered the mesosternal projection as an insufficient discriminatory character, being a simple apomorphy common to many Lamiinae. In all likelihood, it is a specialised character.

- *Epicasta malayana* **n**. **sp**. differs from *E. ocellata* (Fig. 2) in the ridged scape. This character should imply a different tribe (Epicastini / Desmiphorini) but it was proved insufficient to separate *Rhodopinina* from Lamiini (Souza *et al*., 2020). The polarity (primitive / specialised) of this cicatrix is problematic in the phylogeny of Cerambycidae. Certainly, it was not present in archaic cerambycids (absent in nearly all species) and archaic Lamiinae (Pteropliini) but it appeared several times in Cerambycinae (Xystrocerini, Cerambycini) and in apparently unrelated Lamiinae (Mesosini, Sternotomini, Prosopocerini, Phrissomini, Lamiini, Batocerini). Other tribes of Lamiinae (Ancylonotini, Dorcaschematini), as well as Cerambycinae (Xystrocerini, Callichromatini), developed different apical structures on the scape: granules, double cicatrices, spines, etc. On the other side, this cicatrix is variously developed inside Lamiini, sometimes very strong, even spinose, sometimes strongly reduced (scarcely developed?), as in *Orsidis* Pascoe, or even absent, as in *Rhodopina*. Thus, it seems that the cicatrix on the scape is a variable character, alone neither sufficient to define a group nor to define a strong phylogenetic polarity.

- Finally, *Epicasta turbida* (Fig. 3) is the most peculiar species of the group, so much so to be originally considered close to some Onciderini. Actually, species with and without humeral angles/spines are present in several tribes (Lamiini, Mesosini, Onciderini, etc.) and even inside the same genus, *e.g*., *Agelasta* Newman (Mesosini). The elytra are strongly reminiscent of Zygocerini, but other morphologic characters (shape of head and prothorax, antennal length) do not fit this Australian tribe. However, the angulated humerus is a specialised character in this case as well.
In conclusion, none of the analysed characters is sufficient to discriminate into which tribe this taxon belongs.

The coloration of these species is too particular to not consider them as closely related. Nonetheless, the analysed characters (prosternum, scape, humerus) are typically used to separate different genera or even tribes.
Is it about convergent evolution? It does not seem to be the case since the species inhabit split regions.
According to Tavakilian (2024) "the generic material can be horizontally transferred from an organism to another by the very fact that they share the same food plant." This can explain why species belonging to different genera and even families share the same coloration. Nonetheless, this intriguing hypothesis was not proved scientifically. Moreover, the species examined here do not share the same habitat, not even the same distribution and, maybe, the same food plant.
The limits of the morphology in the classification of Lamiinae are here very evident.
The presence of the cicatrix on the scape, in addition to the aspect and the furrowed mesotibiae, makes *E. malayana* **n**. **sp**. a clear member of Lamiini.
On the other side, *Epicasta* has really little to do with the American genus *Desmiphora* Audinet-Serville, 1835. Its classification in this tribe is only due to the smooth scape, but this character was proved insufficient to separate other "Desmiphorini" from Lamiini (Souza *et al*., 2020).
If *E. malayana* **n**. **sp**., as it seems, it closely related to the already described *Epicasta*, its continental distribution suggests that the cicatrix on the scape is, in this case, a primitive character that disappeared in the insular species (*E. ocellata* and *E. turbida*). Analogously, the angulated humerus is a specialised character which evolved in an insular species (*E. turbida*). This seems to constitute a gradation of characters inside of the same genus, which emerged in continental Malaysia and evolved in the adjacent islands.
Consequently, the tribe Epicastini is removed from the synonym with Desmiphorini and considered as a new synonym of Lamiini.

The position of *Acalolepta biocellata* remains questionable. Moreover, the characters of *Epicasta malayana* **n**. **sp**. (opposite claws, toothed mesotibiae, scape with open cicatrix, parallel-sided frons, truncated prosternum, elytra rounded at apex and punctured at base) correspond to the genus *Pseudodihammus* Breuning, 1936 as well. Currently this genus includes two species, possibly synonyms, widespread in Peninsular Malaysia and Borneo and both characterised by a spotted black-white pubescence (Vitali, 2024).
If the peculiar coloration has allowed merging together the mentioned *Epicasta* species ignoring some structural characters, then *Acalolepta biocellata* should be also merged into *Epicasta.* By the way, it is the only *Acalolepta* showing this peculiar coloration. Nonetheless, the structural characters of the genus *Epicasta* would become quite disparate (prosternum rounded or truncated, scape ridged or simple, humerus rounded or angulated) and the genus would be only characterised inside Lamiini by its dorsal coloration.
Otherwise, if the structural characters are taken into account, *Pseudodihammus* should be merged into *Epicasta*, despite its different coloration. Actually, the particular coloration of *E. malayana, E. ocellata* and *E. turbida* could be another specialised character, while *Pseudodihammus* shows a simpler, likely more primitive, coloration. This might be confirmed by the fact that both *Pseudodihammus* species show a more developed cicatrix on the scape.
Nonetheless, the fact that *Pseudodihammus* is an insular genus goes against the hypothesis that specialised characters evolved in insular species, as previously supposed. Actually, the Sunda Shelf, which connected together Malacca, Borneo, Sumatra and Java during the Glacial ages (Earle, 1845), formed several times and these species (or better, their ancestors) merged together several times as well; hence, these phylogenetic hypotheses are too simplistic.
Considering that the coloration of *Acalolepta biocellata* is the only character similar to that of *Epicasta* and that of *Pseudodihammus* is very different, it is preferred to let the taxonomy stand as it is, and to indicate that this is a provisory and not well-founded solution.
Analysing this group of species, the limits of the morphology in the classification of Lamiinae are very evident. But this problem was already known in the past, as demonstrated by the fact that esteemed specialists grouped species in very different ways according to the characters used in their classification. I did not have the opportunity to examine the male genitalia, since some of these species are known only as females. Possibly, further, *e.g.,* genetic analyses, could give more light on this topic.

Acknowledgements

This article could not have been published without the kind collaboration of some colleagues. I am grateful to to Gérard Chemin, Champigny-sur-Marne (France) and Daniel Heffern

(Houston, USA), for the pictures of the holotypes of *Epicasta ocellata* Thomson, 1864 and *Psaumis turbidus* Pascoe, 1866 respectively.
I also thank Larry Bezark (Sacramento, USA) and Sergio Devesa (Pontevedra, Spain) for providing suggestions and constructive criticism, which have improved the manuscript, as well as Lionel Delaunay (Saint-Etienne, France) for his precious collaboration.

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Résumé

Vitali F., 2025. – Le genre *Epicasta* Thomson, 1864 et les limites de la systématique morphologique dans l'étude des Lamiinae (Coleoptera Cerambycidae). *Faunitaxys*, 13(07): 1 – 5.

Epicasta malayana **n**. **sp**. est décrite de la Malaisie péninsulaire. La coloration particulière de cette espèce a permis de la classer dans le genre *Epicasta* Thomson, 1864 (Desmiphorini, olim Epicastini), mais la présence d'une cicatrice sur le scape la place dans la tribu Lamiini. L'analyse des autres espèces du genre a permis de transférer *Epicasta* chez Lamiini et de traiter Epicastini comme un synonyme plus jeune de Lamiini. La position systématique d'*Acalolepta biocellata* Breuning 1940 et du genre *Pseudodihammus* Breuning, 1936, qui présentent des caractères similaires à ceux *d'Epicasta*, est discutée.

Mots-clés. – Coleoptera, Cerambycidae, Lamiini, Epicastini, Desmiphorini, *Epicasta*, taxonomie, description, synonymie, nouvelle espèce, Malaisie.

Faunitaxys

Volume 13, Numéro 07, Février 2025

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Le genre *Epicasta* Thomson, 1864 et les limites de la systématique morphologique dans l'étude des Lamiinae (Coleoptera Cerambycidae).

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Illustration de la couverture :

Scenery outside Tanah Rata - Cameron Highlands - Malaysia.

Crédits:

Francesco Vitali : Fig. 1
Gérard Chemin : Fig. 2 (modifiée)
Eugenio H. Nearns : Fig. 3 (modifiée) & 4.
Adam Jones, from Kelowna, BC, Canada : couverture

Publié par l'Association Française de Cartographie de la Faune et de la Flore (AFCFF)